

NATIONAL WEATHER SERVICE, ALBUQUERQUE



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Co-op Corner: *The transition from F&P rain gauges to the electronic FPR-E's.*

Recent Weather: *Todd takes an in-depth look at recent weather events from fires to flooding and what happened to our Monsoon.*

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Meet Your Observers: *Maxine recognizes two of our outstanding observers from Dilia and Torreon Navajo Mission.*

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New Mexico

Skywatcher

VOLUME 7, ISSUE 2

OCTOBER 2011



From Fires to Floods...

This Fall edition of the New Mexico Skywatcher is brought to you by the staff of the National Weather Service office in Albuquerque. This publication represents a collective effort, offering a wide range of information regarding New Mexico weather, as well as an in-depth view of the current projects and events ongoing at your local National Weather Service.

Until just recently, it had been quite busy and eventful weather-wise. New Mexico observed a monumental spring and summer this year, shaped by historical drought, persistent strong winds, an epic wildfire season, and even flash flooding.

The Stage is Set

In the Fall 2010 edition of the New Mexico Skywatcher, La Niña was discussed along with the implications of a dry winter and

spring arriving over New Mexico in the 2010-2011 seasons. As expected, New Mexico observed above normal temperatures along with below normal precipitation through the first half of 2011. Over 94% of the state was under drought by late June, and vegetation and fuels were primed for fire growth given ignition.

Strong Winds and Low Humidity: Potential for Disaster

While the bulk of any substantial precipitation bypassed New Mexico, numerous wind events plagued the state. An excessive number of windy days were recorded throughout most of the state while low relative humidity persisted due to the ongoing warmer temperatures and drought conditions. When the ingredients of strong wind and low humidity are combined with dry vegetation (fuels), a

article continued on page 4

The Radio Room



Another severe New Mexico summer is fading into memory as the first frosts tinge the countryside. Amateur radio was so much a part of what made our work possible this summer. We appreciate all those excellent reports from organized emergency nets, from operators who make a point of reporting severe weather day in and day out, and from hams who may have been just passing through but were in the right place at the right time. You all made crucial differences as warning forecasters decided how to warn your neighbors. And, you shared so much of what you saw on the ground to help us

understand severe weather impacts. With so much new technology out there and so many ways to pipe live video and audio quickly over hundreds of miles in an eyeblink, I am so proud that some of the most adept users of these new capabilities happen to be amateur radio operators. This continues our long tradition of riding at the forefront of technology, science, and communication. If it can be done, a ham radio operator will figure out how to do it. Speaking of a proud future, make plans to join us on the air for our annual SKYWARN Recognition Day. Customarily the first Saturday in December, we'll tack down details over the next few weeks and look forward to meeting up with you on the air. See you around the bands!

73 de Tim, KM4KS, Trustee of WX5ABQ

Co-op Corner

----- A MESSAGE TO OUR COOPERATIVE OBSERVERS -----

The leaves are changing colors, temperatures are beginning to drop, and the chill of winter is in the air. Snow has already begun to fall in some of the higher elevation areas and will become more common in the weeks to come. It is a good idea to review your snow measuring guidelines within the next few weeks to prepare for this seasonal change. Keep an eye on the temperatures to determine when to bring the funnel and inner tubes in from your rain gauges. Funnels should be brought in once snow is likely.

Please, remember to fill out your station data at the top of your monthly forms as completely as possible. This will help us track them locally. The National Climatic Data Center will also be able to archive them properly.

If you take precipitation measurements, please fill in all the columns appropriately. Rain and melted snow are to be recorded with 3 digits to the nearest one hundredth, (Example: 0.00) while snowfall, hail and ice pellets are to be recorded with 2 digits to the nearest tenth (Example: 0.0). Snow depth is recorded to the nearest whole inch, so you will either report a Trace or a single digit.

We would like to again thank all our observers for your continued support of the National Weather Service. The volunteer service you provide has immeasurable value to local, city, state, federal, and international partners. The information provided by Cooperative Observers for the past 120+ years is the foundation of the Nation's Climate Record.

Should you have any questions or concerns, you may reach our office at 1-888-386-7637 or e-mail us at SR-ABQ.Coop@NOAA.GOV.

Author: Amanda Martin

COOPERATIVE OBSERVER SERVICE AWARDS:

- **Conchas Dam**
75 Years of Service
- **Joe Lopez**
Valmora
55 Years of Service
- **Marlen Easley**
Placitas 4W
20 Years of Service
- **Linda S. Grilli**
Mountainair 8NW
20 Years of Service
- **John B. Calhoun**
Mountainair 8NW
20 Years of Service
- **Charlie A. Liles**
ABQ Foothills
20 Years of Service
- **Chip Wood**
Pasamonte
15 Years of Service

Use the sample form to the right as a guide for filling out your monthly forms.

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Out with the Mechanical, in with the Electronic

They're here! The long awaited Fisher Porter rain gauge upgrades (FPR-E's) have arrived! These new electronic recorders will replace the mechanical paper tape punch machines (F&P's) that have been out in the field for over 30 years. These new machines will make the process of retrieving rain data every month much more user friendly. Out of the 41 sites located across this beautiful state, we have successfully installed 32. Our staff will continue to install the remaining upgrades throughout the next couple of months.

About the FPR-E's

The digital precipitation recorder is mounted on the same base where the paper tape punch was mounted. The punching mechanism has been replaced with a clear plastic box which contains the new data recorder. This clear plastic outer shell protects the electronic components inside this area (Fig. 1). Instead of the large spring that was mounted just behind the punching mechanism, the weighing sensor is now an S-shaped metallic bar that measures the weight of the bucket and its contents. The weight of the rain bucket pulls on the S-shaped metallic bar and will stretch with increased weight. This weighing sensor is very sensitive and can detect changes of one thousandth of an inch of precipitation in a matter of seconds. Readings from the sensor are processed by the recorder every fifteen minutes and stored.

The display, which is encased by a clear plastic shell, has a numerical display area at the top (Fig. 2). The display stays in a sleep mode until the button is pressed on the lower right side of the display box. By pressing this button the display will show the latest recorded amount of everything in the bucket. The display will stay lit for about 2 minutes before automatically turning off and returning to sleep mode.



Figure 2: The numerical display of the new Fisher Porter Upgrades.



Figure 1: The electric components of the new Fisher Porter Upgrades (FPR-E's) is protected by a clear plastic shell..

Data will still be collected in the first few days of the month, but will now be downloaded onto a USB flash drive. The stored data is transferred to the USB memory stick when inserted into the socket on the right side of the Assembly. Once this is done the flash drive can be mailed back to our office or emailed as an attachment.

Author: Amanda Martin



To Left: Picture of the new FPR-E gauges showing new features and what they look like fully installed.

To Right: Meteorologist Interns Jason Frazier and Amanda Martin installing an FPR-E out in the field.



...From Fires to Floods

article continued from page 1

recipe for rapid wildfire growth is born. While bouts of strong winds are common in the winter and spring months over New Mexico, these wind events typically fade away as the late spring and early summer months arrive. However, strong winds were stubborn, lingering into the late days of June this year. In fact strong winds were observed over much of northern, central, and eastern New Mexico as late as June 26th, the day that the Las Conchas wildfire ignited in Sandoval county. You can see a table below, listing New Mexico wildfires (greater than 10,000 acres) thus far in 2011.

A Shift in the Threat

As the early to middle part of July approached, upper level winds finally began to subside, and this translated to weaker winds at the surface. Fire management crews were able to progressively contain ongoing wildfires, and attention began to be re-focused on upcoming changes to the weather and the impacts in store for the ample amount of land that had recently burned. As the upper level winds weaken over the desert southwest during the summer months, an indirect, but significant, artifact is observed in the form of increased subtropical moisture. This seasonal increase in subtropical moisture, known more casually as the North American monsoon, brought increasing concerns of heavy rainfall over areas scarred and burned by wildfires. While the nature of monsoon rainfall is often localized, spotty areas can observe bountiful rainfall over very short durations, leading to a risk of flash flooding. This risk is escalated over severe burn scar areas, as vegetation has been consumed and the absorptive properties of the ground and soil have been lost. Because the burn-scarred and hardened ground has difficulty absorbing water, any rainfall quickly runs off. Essentially, rain falling over a burn-scarred area is analogous to heavy rain over concrete. As runoff abruptly increases, it has the ability to carry large amounts of ash, burned timber, and other debris down to lower elevations within any drainage basins. Dangers associated with flash flooding can quickly be multiplied and intensified.

Worst Fears Realized

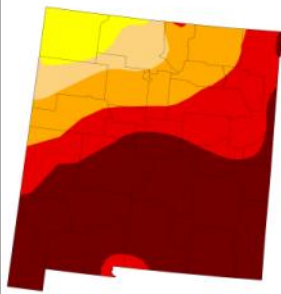
Unfortunately, fears of burn scar flash flooding were realized several times throughout the 2011 summer monsoon. While these events were localized and isolated to small areas, the impacts were significant. One of the worst events occurred in August over the Las Conchas burn scar; flash flooding was observed August 21st, and then again on the 22nd. The image on the left margin was captured on August 21st.

Support from the Albuquerque National Weather Service (NWS)

Not only did the Albuquerque NWS office handle copious amounts of flash flood warnings for these threatened burn scar areas, but numerous other efforts were made to convey these impending threats. Detailed teleconference and video briefings were held, and new graphical aides were developed to better portray upcoming flooding hazards. In addition, local NWS staff also worked in unison with emergency managers, land officials, and fire management teams to keep workers and residents abreast of the latest weather conditions. Several damage assessments and surveys were also carried out.

It is unfortunate, but the effects of these monumental events of the past several months will remain visible for some time.

Author: Todd Shoemake



Intensity:
 D0 Abnormally Dry
 D1 Drought - Moderate
 D2 Drought - Severe
 D3 Drought - Extreme
 D4 Drought - Exceptional

**The Drought Monitor
for New Mexico valid on
June 21, 2011.**



**Flash flooding observed
near Tent Rocks in
Peralta Canyon on
August 21, 2011. Photo
by Floyd Pecos.**

2011 NM FIRES	ACREAGE
WALLOW (*AZ AND NM)	538,049
LAS CONCHAS	156,593
DONALDSON	101,563
MILLER	88,835
ENTERPRISE	64,936
LAST CHANCE	53,342
BATON ROUGE COMPLEX	35,165
WINDY	32,143
MAYHILL	31,861
LOOP	30,487
KIZER 5	30,000
TRACK	27,792
MARTIN 2	24,781
JACKIE	24,500
RABBIT EAR	24,305
TIRE	24,000
CLOVERDALE 2	23,600
LOOKOUT COMPLEX	22,661
CROOKED CREEK	18,198
296 FIRE	15,280
GODFREY	15,086
BRITT	14,507
ABRAMS	13,424
WHITE	10,384
PACHECO	10,250

Mobile Radar Visits Albuquerque

During the summer of 2010, a mobile radar that was deployed in Durango, Colorado, dubbed NO-XP, allowed meteorologists at the National Weather Service to see details in storms for the first time across the Four Corners area. More information



Albuquerque National Weather Service staff members pose in front of the NO-XP radar from the National Severe Storms Laboratory. From Left to Right: Raymond Jojola, Jennifer Palucki, Ken Widelski, Brian Guyer, "Little Daniel" Torres, and Maria Torres.

on this project can be found in the Fall 2010 issue of this newsletter. On the whole, the project was a success, and the National Severe Storm Laboratory (NSSL) researchers even went back over the winter to collect more data.

Nearly a year later from the original deployment, the mobile radar was heading west on Interstate 40 through Albuquerque. The radar's final destination was Phoenix, however, NSSL researcher Steve Vasiloff was kind enough to stop by the National Weather Service in Albuquerque to allow forecasters to tour NO-XP. Steve graciously told us how the radar deployment works while showing us the in's and out's of the truck itself. Having never seen a mobile radar truck before, many forecasters were fascinated. The visit bridged the gap between how the data was collected to the images on the computer screen that forecasters used for issuing flood advisories.

Author: Jennifer Palucki

Staff Changes at the Albuquerque NWS

Jason Frazier is our newest Meteorologist Intern. Jason graduated from The Ohio State University in June 2011 with a Bachelor's Degree in Geography. Jason developed a fascination for weather during early childhood. After working in the Student Career Employment Program at the NWS Headquarters in Silver Spring, MD, Jason accepted a meteorologist intern position here at WFO Albuquerque. He is looking to jump start his forecasting career by learning more about severe thunderstorms and mountain meteorology.



David Jerkins put his electronic and mechanical expertise to use when he constructed this miniature tornado machine. His technical proficiency and dedicated overview will be missed.

On a sad note, NWS Albuquerque will be saying good bye to Electronics Systems Analyst David Jerkins and Senior Meteorologist Daniel Porter. David will assume his new duty of Southern Region Electronics Program Manager in the Systems Operations Division in Fort Worth, Texas. Daniel Porter will be moving to Silver Spring, Maryland to assume the role of Emergency Response Meteorologist at NOAA Headquarters. David and Daniel, we wish you the best in all future endeavors.

Author: Ken Widelski



On the Left: Daniel Porter has been an integral asset to the Weather Forecast Office at Albuquerque. Daniel implemented countless tools that have enhanced office operations. You will be missed, Daniel! On the Right: Jason Frazier will pick up some of the programming, data integration, and other meteorological skills that Daniel has left behind. Welcome aboard, Jason!

Meet Your Observers

Mary Sullivan & Family

Weather is of great importance to the Sullivan family. They have been providing weather information from Dilia, New Mexico since 1941. Dilia is located in Guadalupe County, about 32 miles southeast of Las Vegas, NM. Cooperative weather observer, Mary Sullivan, with help from her daughter Marietta and Marietta's nephew Joseph, take daily observations which include max and min temperature readings and precipitation. The weather data they provide is critically important to the Weather Forecast Office in Albuquerque, as well as to fellow farmers and ranchers throughout the area.

The long history of weather observing in Dilia began for the Sullivan family in 1941. It was the first year that Marietta's grandmother, Nellie Sullivan, began taking weather observations for the Weather Bureau (now known as the National Weather Service). Nellie's weather station was Dilia 1SSE. Her reports included daily temperatures and precipitation. In 1964, Nellie's son, Earl, took over the weather observing duties from his mother. At that time, the weather station was relocated to his home nearby and renamed Dilia. In 1980, Earl received some new weather equipment, when a Fischer Porter battery powered rain gauge with a paper punch tape was installed. The gauge had an electronic timer with a 15 minute punch cycle. The gauge measured and punched the amount of precipitation onto a paper tape. In 1988 Earl's wife, Mary, became the new weather observer in Dilia.

Mary's daughter, Marietta, recalls that plants such as the Desert Willow, which were provided to her father Earl and Grandmother Nellie so many years ago, are still growing on their property to this day. They were planted to determine how climate in the area affected growth and quality.

In September 2011, the old Fischer Porter automatic rain gauge in Dilia was replaced with an upgraded electronic version (FPR-E). The FPR-E rain gauge will make the process of retrieving rainfall data easier. Rainfall data is now downloaded onto a flash drive each month by the weather observer, and attached to an email or mailed to the Weather Forecast Office in Albuquerque.

In 2008 Mary Sullivan received a Length of Service Award, recognizing 20 years of service as a cooperative weather observer. October 2011 marks three additional years of service for Mary. The Sullivan family's many years of dedicated support of the National Weather Service, as well as their community, has made a significant contribution to our knowledge of the climate of the United States, and is much appreciated by many.

In 2008 Mary Sullivan received a Length of Service Award, recognizing 20 years of service as a cooperative weather observer. October 2011 marks three additional years of service for Mary. The Sullivan family's many years of dedicated support of the National Weather Service, as well as their community, has made a significant contribution to our knowledge of the climate of the United States, and is much appreciated by many.

Paul Skiles

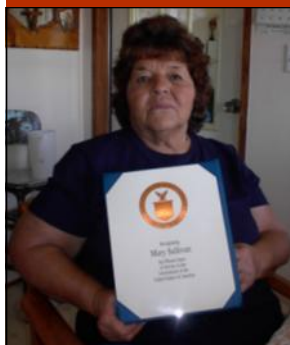
In addition to their dedicated work at the Torreon Navajo Mission, Paul Skiles and his father, David Skiles, have provided important weather information from this site in northwest New Mexico for the past 50 years. Torreon Navajo Mission is located in Sandoval County, 25 miles southwest of Cuba, New Mexico.

In January 1961, Paul's father, David Skiles, began taking weather observations at Torreon Navajo Mission. His reports included daily max and min temperatures and precipitation. In April 1980, some of his weather equipment was upgraded, with the installation of a Fischer Porter battery powered rain gauge with a paper punch tape. The paper tape was changed and mailed to the weather office in Albuquerque each month.

Paul began helping his father with the weather station at Torreon Navajo Mission through the years, and eventually became the



Amanda Martin presents a 50 Year Length of Service Award to Paul Skiles on September 23rd.



Mary Sullivan, observer Dilia, received a 20 year length of service award in 2008.

Meet Your Observers (continued)

weather observer. On September 23, 2011 the old Fischer Porter paper punch tape at the Torreon Navajo Mission was replaced with an upgraded electronic gauge (FPR-E) which made the process of retrieving the rainfall data easier. With the FPR-E's, the paper tape is no longer required.

On September 23, 2011 Paul Skiles accepted a Length of Service Award for Torreon Navajo Mission, recognizing 50 years of service in the Cooperative Observing Program. Long and continuous records provide an accurate picture of a locale's normal weather, and give climatologists a basis for predicting future trends. The weather information that the Skiles have provided has made a significant contribution to our knowledge of the climate of the United States.

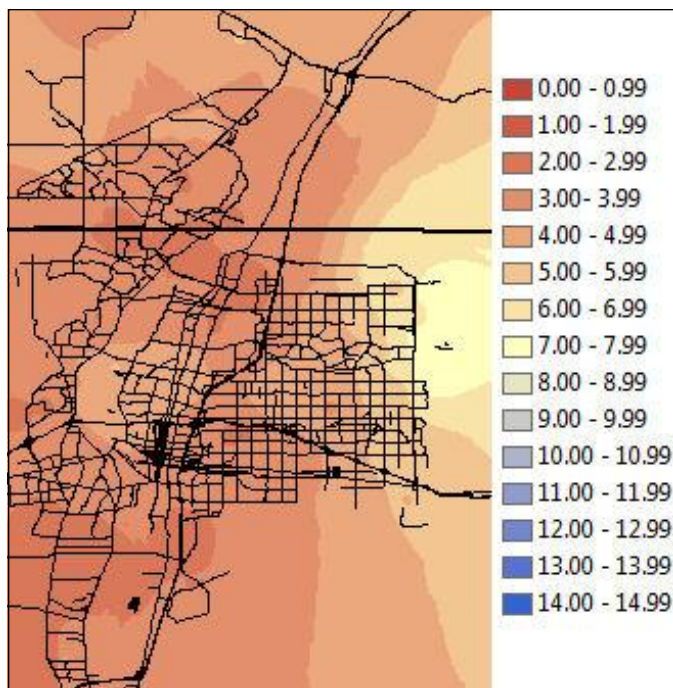
Author: Maxine Pacheco

The 2011 Albuquerque Monsoon...and Beyond!

Was it dry this monsoon? Yes. Was it the driest ever? No. Believe it or not, Albuquerque was not as dry as it's ever been. In fact, the driest monsoon (June 15-September 30), as recorded by the Albuquerque Sunport, occurred in 2003 when only 1.46 inches of rain fell. This year 1.72 inches of rain was observed at the Albuquerque International Sunport. Looking at the chart to the right, you can see that makes 2011 the 5th driest on record. Ironically, in the past decade, *both* the wettest and the driest monsoons on record have occurred.

Of course, not all locations in Albuquerque received the same amount of precipitation. The dedicated members of the Community Collaborative Rain, Hail and Snow (CoCoRaHS) Network

Lowest Monsoon Totals			Highest Monsoon Totals		
1	1.46 inches	2003	1	9.42 inches	2006
2	1.53 inches	1953	2	9.10 inches	1988
3	1.55 inches	1905	3	8.83 inches	1933
4	1.59 inches	1917	4	7.29 inches	1919
5	1.72 inches	2011	5	7.18 inches	1940



Networks of volunteer cooperative, CityNet, SKYWARN, and CoCoRaHS observers were utilized to generate this map displaying precipitation variability across Albuquerque during the monsoon (June 15-September 30, 2011).

help fill in the gaps across the metro area. Looking at the spatial distribution of precipitation on the map to the left, you can see the Sunport was actually one of the drier parts of town. Normal monsoon precipitation for the Sunport is 4.61 inches, therefore, only 37 percent of normal precipitation was observed. Meanwhile, the Albuquerque Foothills received 7.41 inches of precipitation, which is 99 percent of the normal 7.47 inches.

Since precipitation amounts were generally lighter, flooding events were few and far between. However, heavy rains in the foothills sent rushing water through the arroyos of Albuquerque and one man had to be rescued from the turbulent waters in July.

Though the summer months are climatologically the time when Albuquerque receives the most precipitation, this year, October appears to be the big winner. Checking in at 1.44 inches of precipitation through the first week, October has already exceeded any one month total from any summer month! Of course, since we need the rain, there aren't many who are complaining.

For more information on how this year's monsoon compared to past years, visit <http://weather.gov/abq/?n=2011albuquerquemonsoon>.

Author: Jennifer Palucki

By The Numbers

The summer of 2011 can be summed up very easily: much too warm and much too dry across New Mexico. The state as a whole had the warmest summer (June through August) on record, going back 118 years! It was also the 2nd driest summer on record!

The 2011 summer monsoon season could be renamed the “spotsoon” as decent rainfall was spotty all summer, with no widespread, major heavy rain or flash flood events. The more active periods with heavy rain occurred in late July (21st-28th) and in the latter half of August (19th-22nd). The hardest hit areas were of course the burn scars following the worst fire season ever in New Mexico. Especially hard hit was the Las Conchas Fire Burn area.

That's not snow!!



During an early summer thunderstorm, hail was piled up several inches near Johnson Mesa, 16 miles east of Raton. Photo by Tucker Berry, July 2, 2011.

The first table below lists the top five precipitation totals from June through September. The race for top honors went to Ocate.

Location	Precipitation (June-September 2011)	Co-op Observer
Ocate	11.08 inches	Louis Mares
Gascon	10.32 inches	Editha Bartley
Raton Filter Plant	9.66 inches	City of Raton
Ruidoso Fire Dept.	8.95 inches	City of Ruidoso
Los Alamos	8.79 inches	Los Alamos National Lab

Not only was the summer much drier than normal, but temperatures were well above normal, with several records being broken for the most consecutive days of 90 degrees or higher. Also, the record of most consecutive 100 degree days was met at a few locations. The hottest periods of the summer were observed from June 23-27, July 8-10, July 20-22, and August 9-10.

The second table below lists the hottest temperatures of the summer. Bitter Lake Wildlife Refuge took top honors again this year with 109° F, followed by Ute Dam with 108° F and 107° F, while Conchas Dam, Fort Sumner, Elida, and Mosquero all managed to reach 106° F.

Author: Chuck Jones

Location	Highest Temperatures	Co-op Observer
Bitter Lake Wildlife Refuge	109° F	U.S. Fish and Wildlife
Ute Dam	108° F	Kent Terry
Conchas Dam	106° F	Joe Martinez
Elida	106° F	Lana Hayes
Fort Sumner	106° F	Betty Dunlap
Mosquero	106° F	Richard Hammer

**National Weather Service,
Albuquerque**

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Albuquerque, NM 87106-5633
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Working Together to Save Lives.

Would you like to receive notice of future issues?

The New Mexico Skywatcher will be available on your NWS website at <http://www.weather.gov/abq>. If you would like to be notified of new issues via email, submit your request to sr-abq.webmaster@noaa.gov (make sure to state your name and email address).